Navy Ergonomic Success Stories

Introduction

Naval Facilities Engineering Command (NAVFACENGCOM) provides high quality engineering services to help the customer identify and solve ergonomic problems to improve productivity and minimize work related injuries. The goals of the NAVFAC Ergonomic Hazard Abatement Program are:

- Develop Navy-wide ergonomic design guidelines
- Identify Navy-wide industrial design, tool and equipment problems and assist activities in abating ergonomic hazards
- Provide no cost on-site design & ergonomic assistance
- Support Navy process engineers, facility designers and safety specialists
- Share design, tool, equipment and process success stories and lessons learned

NAVFACENGCOM is taking a proactive role in executing the Ergonomic Program as described in Chapter 23, of OPNAVINST 5100.23E dated 15 January 1999

> "It is Navy policy to provide a safe and healthful workplace for all personnel. To assure a safe and healthful workplace, it is sometimes necessary to redesign a workstation or task."

This is the preferred method of controlling harmful stresses as stated in paragraph E6.1.3 of Department of Defense (DOD) Instruction, Safety and Occupational Health (SOH) Program, number 60551.1 dated 19 August 1998

> "Effective design or redesign of a task or workstation is the preferred method of preventing and controlling harmful stresses." Additionally, paragraph E6.1.7 states "Each Component shall consider ergonomic design criteria during procurement of weapon systems, facilities and equipment to help reduce the lifecycle costs due to ergonomic injuries."

The NAVFAC Ergonomic Hazard Abatement Team developed the SUCCESS STORIES found in this text as they strive to create improved and safer working environments. Success stories reflect actual results from interventions. The SUCCESS STORIES include activity description and associated hazards, recommended opportunities for improving worker performance, safety and health as well as the actual and probable benefits derived from modifications in process, equipment or job design.

The Numbers

Ergonomic injuries affect worker quality of life and amount to major economic costs for the Navy. Navy wide blue-collar worker compensation life cycle costs are more than $1.8 billion for current claims (Table 1), with, an under reported, 43% of those claims related to ergonomics (Table 2). Blue-collar back strain claims alone range between $12 and $22 million per year. A single back injury ranges from $4,000 to $168,000 with strain/sprain cases averaging $55,000.

Blue Collar Injury	Cases	Ultimate Life Cycle Cost	Ave. Cost Per Case
Injury No lost time	38752	$213,090,500	$5,499
Back Injuries < 45 days	15711	$63,325,990	$4,031
Back Injuries > 45 days	2309	$389,202,100	$168,559
Injury not back < 45 days	31686	$73,024,900	$2,304
Injury not back > 45 days	5136	$618,352,600	$120,396
Other	114	$5,675,811	$49,788
Mortality	26	$16,366,150	$55,853
Injury Total	93734	$1,379,038,051	
Blue Collar Illness			
Hearing Loss	4129	$100,752,700	$24,401
Emotional	467	$58,272,240	$124,780
Strains and Sprains	3420	$191,015,900	$55,853
Asbestosis	960	$33,217,000	$34,601
Mortality	24	$12,474,100	$519,754
Other	2169	$87,081,280	$40,148
Total Illness	11169	$482,813,220	
Total Injury & Illness		**$1,861,851,271**	

White Collar Injury	Cases	Ultimate Life Cycle Cost	Ave. Cost Per Case
Injury No lost time	15926	$86,729,220	$5,446
Back Injuries < 45 days	6607	$26,614,940	$4,028
Back Injuries > 45 days	893	$144,652,000	$161,984
Injury not back < 45 days	17194	$42,759,030	$2,487
Injury not back > 45 days	1902	$228,271,200	$120,016
Other Non-Back > 45 days	74	$4,164,204	$56,273
Mortality	21	$12,987,090	
Injury Total		$546,177,684	
White Collar Illness			
Hearing Loss	1019	$26,366,940	$25,875
Emotional	711	$90,162,140	$126,810
Strains and Sprains	2074	$111,944,700	$53,975
Asbestosis	264	$8,909,990	$33,750
Mortality	10	$5,468,507	$546,851
Other	1417	$57,040,710	$40,255
Total Illness		$299,892,987	
Total Injury & Illness		**$846,070,671**	

COMBINED BLUE AND WHITE	
TOTAL COST	$2,707,921,942
Total Back	$623,795,030
Ergonomics	$936,595,645

Table 2 **Navy-wide Injuries**

Blue Collar Injury	Cases	Percentage of Cases
Back strain	20572	21.94%
Contusion	16601	17.71%
Fracture	4184	4.46%
Laceration	9860	10.52%
Multiple Strain	20075	21.41%
Other	22454	23.95%
Total	93746	
White Collar Injury		
Back strain	514	19.40%
Contusion	432	16.31%
Fracture	118	4.45%
Laceration	185	6.98%
Multiple Strain	825	31.14%
Other	575	21.71%
Total	2649	
Ergonomics		
Blue Collar		43.36%
White Collar		50.55%
Combined		**43.56%**

The Ergonomic Hazard Abatement team targets those occupations having the highest rate of injury (Table 3). The rising cost of providing medical treatment to injured personnel, and the decrement of their quality of life coupled with the associated loss in manpower, provides added impetus to identify and abate hazards before an injury incident[1].

Table 3 **Navy-wide Blue Collar Injury Rate**

	Cases	Rate per 100 Man Years
Pipefitting	6937	13.9
Welding	4975	17.5
Shipfitting	3979	18.6
Painting	3971	17.2
Sheet Metal Mechanic	4962	12.6
Marine Machinery Mechanic	4594	12.9
Rigging	3661	15.7
Electrician	4866	10.4
Machining	3603	10
Heavy Mobile Equipment Mechanic	2203	14.6
Materials Handling	3554	8.7
Other	46441	9.6
Average		**11.1**

[1] Table Source: Occupational Safety & Health System OSHSYSS98 Version 3.0